Patent Claims

1. Electric heating device, in particular as supplemental heating for motor vehicles, with several heating elements (2) comprising a heater block, and a control unit for controlling the heating elements (2), whereby the control unit forms one structural unit with the heater block and exhibits power transistors (19) arranged on a printed circuit board (10) and cooling elements allocated to these power transistors and one cooling element each is connected through an opening (23) in the printed circuit board (10) to the respective power transistor (19),

   characterised in that

   the cooling element is formed from a cooling body (25) and a heat-conducting element (24) insertable into the opening (23) of the printed circuit board (10).

2. Electric heating device according to Claim 1, **characterised in that** the heat-conducting element (24) is glued to the cooling body (25).

3. Electric heating device according to Claim 2, **characterised in that** the glue (28) used to glue the heat-conducting element (24) and the cooling body (25) produces an electric insulation of the heat-conducting element (24) and the cooling body (25).

4. Electric heating device according to Claim 1, **characterised in that** the heat-conducting element (24) is made of copper.

5. Electric heating device according to Claim 1, **characterised in that** the cooling body (25) is made of aluminium.

6. Electric heating device according to Claim 1, **characterised in that** the mass of the heat-conducting element (24) is very much smaller than that of the cooling body (25).

7. Electric heating device according to Claim 1, **characterised in that** the opening (23) provided for in the printed circuit board (10) and the heat-conducting element (24) are essentially cylindrically formed.

8. Electric heating device according to Claim 1, **characterised in that**

the cooling body (25) has an essentially flat section (26) with an opening (29),

the heat-conducting element (30) protrudes through the opening (29) in the flat section (26) of the cooling body (25), and

the heat-conducting element (30) has at least one lateral projection (30a) on the end protruding through the cooling body (25) and out of the latter for mechanical fastening of the cooling body (25).

9. Electric heating device according to Claim 8, **characterised in that** the lateral projection (30a) is a bulb laterally fitting around the protruding end of the heat-conducting element (30).

10. Electric heating device according to Claim 1, **characterised in that** the cooling bodies (25) are arranged in the heating device such that the air to be heated can be blown around them via window openings (7) provided for in a housing of the heating device.

11. Electric heating device according to Claim 1, **characterised in that** the surface of the cooling bodies (25) is provided on the outside with an electrically insulating coating (31).

12. Electric heating device according to Claim 11, **characterised in that** the surface of the cooling bodies (25) is provided with an electrically insulating coating (31) essentially only in the region opposite the window openings (7).

13. Electric heating device according to Claim 2, **characterised in that** the glue (28) is an epoxy resin glue, a silicon glue or an acrylic glue.

14. Electric heating device according to Claim 1, **characterised in that** the heat-conducting element (24), as the distance from the power transistor (19) increases, has a larger cross-section area.

15. Electric heating device according to Claim 14, **characterised in that** the heat-conducting element (24) is essentially formed cylindrically.

16. Electric heating device according to Claim 15, **characterised in that** the section (34) of the heat-conducting element (24) arranged in the opening (29) of the printed circuit board (10) has an essentially conical shape growing smaller in the direction of the end in contact with the power transistor (19).

17. Electric heating device according to Claim 16, **characterised in that** the section (34) of the heat-conducting element (24) arranged in the opening (29) of the printed circuit board (10) has radial projections (35) for mechanical fastening of the heat-conducting element (24) in the opening (29) of the printed circuit board (10).

18. Electric heating device according to Claim 1, **characterised in that** the cooling body (25) comprises an essentially rectangular cross-section with a first section (26) arranged parallel to the printed circuit board (10) and a second section (36-38) arranged vertically thereto.

19. Electric heating device according to Claim 18, **characterised in that** the first section (26) of the cooling body (25) has recesses (28a-28c) on the side facing the printed circuit board (10) for accommodating the end of the heat-conducting element (24) protruding from the printed circuit board (10).

20. Electric heating device according to Claim 18, **characterised in that** the cooling bodies (25) of several adjacent cooling elements are formed in one piece.

21. Electric heating device according to Claim 20, **characterised in that** the cooling bodies (25) formed in one piece are connected to each other via the first section (26).